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## **INVESTMENT CONFERENCE**

### **Hedge Funds for Pension Funds**

The Applications of Institutional Investments Working Party

Hugh Cutler (Chair), Gareth Derbyshire, Craig Gillespie, Robert Howie, Shyam Mehta, Michael O'Brien, Thomas Paxton, Greg Wright.

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## ABSTRACT

This paper looks at institutional use of hedge funds and examines the issues that surround the use of hedge funds. We then go on to investigate whether these issues may or may not be overcome.

In particular, it covers:

1. **Introduction and definitions:** What do we mean by "hedge fund"? What are the different types of hedge funds and the main investment techniques they use?
2. **Why allocate to hedge funds:** Hedge funds represent a subset of active management – are they any better than traditional active techniques? Should an institution allocate to hedge funds?
3. **Fear Factors:** What factors prevent more widespread use?
4. **Modeling with Hedge Funds:** What data is available, what problems do we face in using it? What techniques can we use to decide allocations?
5. **Monitoring a hedge fund investment programme:** How can improvements in this area help mitigate or highlight the fear factors?
6. **The future of the institutional hedge-fund industry:** Does capacity present a threat? What trends might we see emerging?

# 1. Introduction and Definitions

## 1.1 Introduction

- 1.1.1 There is a widely-held view that the UK has shifted to a low-inflation and lower-investment-return environment. This has encouraged many to consider whether new sources of return and added value must now be sought.
- 1.1.2 Regardless of views of current conditions, many investors are searching for “efficient” portfolios that give the best return for a particular level and type of risk. This has encouraged some investors to look for sources of return that are not highly correlated with existing “mainstream” asset classes.
- 1.1.3 In that search, there has been some discussion on the suitability of "alternative investments". In particular, “hedge funds” are of interest as they are often perceived to have low correlations with traditional asset classes (and with each other) and so have the potential to offer diversification at the total portfolio level.

## 1.2 Definitions

- 1.2.1 The term "hedge fund" encompasses many different types of investment strategy. The common ground lies in their goal of achieving positive returns in all market conditions using a variety of investment techniques. Many hedge fund managers concentrate on a very narrow field, often only trading in a limited number of securities in a particular market. Typically, hedge funds trade actively in the derivatives markets, and gear up their positions, in order to cost effectively leverage their views.
- 1.2.2 Hedge funds use a number of investment techniques some of which are quite distinct from those used by traditional investment managers. These are outlined below.

<b>Short selling</b>	Short selling involves the sale of borrowed securities considered overvalued in the anticipation of purchasing them later for a profit at lower prices.
<b>Hedging</b>	Hedging is akin to purchasing insurance against an unfavourable event. Types of risks that would be typically hedged are market, currency and interest rate risks. Skilful managers would properly analyze risks in order to hedge them away if they can not be rewarded.
<b>Arbitrage</b>	Arbitrage aims to exploit perceived price inefficiencies between securities and markets. This is typically achieved by locking into low risk profits e.g. by spotting price anomalies or by exploiting stable historical relationships between instruments in different markets. The traditional definition of arbitrage is the generation of riskless profits. In practice, the term arbitrage is relaxed to include situations where there is believed to be a mis-pricing.
<b>Leveraging</b>	Leveraging involves borrowing money in order to increase the effective size of the portfolio or in the form of margin or options purchasing. It is measured by the ratio between overall assets and the base capital. This concept is key to many arbitrage techniques, where the inefficiencies are small and the fund must leverage in order for arbitrage to be worthwhile.

### 1.3 Classification

1.3.1 We classify hedge funds into five categories, Relative Value, Event Driven, Equity Long/Short, Global Asset Allocators and Short Sellers.

#### 1.3.2 Relative Value

1.3.2.1 Relative value strategies primarily focus on linking specific positions. These portfolios combine long positions and offsetting short positions and seek returns independent of market movements. There are three main strategies within this area, equity market neutral, convertible bond arbitrage and bond arbitrage as well as managers that use more than one of these strategies or rotate between these strategies.

1.2.1.2 In equity market neutral investing the manager takes offsetting long and short equity positions, aiming for no net market exposure (i.e. zero  $\beta$ ). In effect, a long-only portfolio benchmarked against an index can be decomposed into that index and a set of long and short positions against that index. If the original portfolio had  $\beta = 1$ , the set of active positions is effectively a market neutral fund. A market neutral fund can then be considered as “pure” active management. For example a UK equity market neutral manager may sell short £100 BP Amoco, and buy £100 Shell stock, predicting that Shell shares will outperform BP Amoco shares, but taking no position on the UK equity market direction, or for that matter the oil sector.

1.3.2.3 In convertible bond arbitrage a manager purchases a convertible bond and takes an offsetting position in an appropriate amount of the same company’s stock. In this case the “hedge ratio” will not be 1, so the manager might buy \$1000 of ABC Convertible stock and sell \$800 of ABC shares. In this case the hedge ratio would be 80%. The manager will earn the coupon on the convertible and interest on the cash generated by selling the stock, less any dividends payable on the stock shorted. The manager may also try and gain by adjusting the hedge ratio according to market movements. For example, if the underlying stock goes up, the bond will generally increase in value and will become more sensitive to further increases in the value of the stock and the manager will sell more stock short to maintain a hedged position.

1.3.2.4 In bond arbitrage, the manager takes offsetting positions in fixed income instruments that have broadly similar characteristics. The long position will be taken in the higher yielding bond, with an offsetting position in a lower yielding bond that otherwise has similar characteristics. These might be between bonds of different maturities, coupons, liquidity or credit rating.

#### 1.3.3 Event Driven

1.3.3.1 Event driven strategies focus on specific corporate transactions. There are two main areas, risk arbitrage and distressed securities.

1.3.3.2 Risk arbitrage investors focus on equity-related opportunities arising from mergers and acquisitions. For example, on 13 December 2000, the Board of Lloyds TSB announced the terms of a proposal for the acquisition of Abbey National under which Abbey National Shareholders will be offered 1.5 New Lloyds TSB Shares plus 260 pence in cash. Based on the average closing prices for the month to 3 November 2000 (the day Abbey National announced it had approached Bank of Scotland regarding a possible acquisition), the offer represented a premium of 40%. A risk arbitrageur that was confident that the take-over would happen might buy Abbey National shares and sell short Lloyds TSB shares to capture the profit that will occur if the deal goes ahead. The manager will claim to have superior insight than the market at large about the probability of the deal going ahead or a superior deal taking place that is beneficial for the Abbey National share price relative to Lloyds TSB.

1.3.3.3 Distressed securities investing focuses on investing in the debt of a company undergoing financial reorganisation. The manager believes that they have superior insight than the market at large for the likely success of the reorganisation and the resulting impact on the price of that company's debt.

1.3.4 **Equity Hedge Funds** - these funds take long and short positions in equities. However, unlike equity market neutral funds, the portfolios generally have some net market exposure and they may try and add value not only by stock picking, but also by market timing, and (if they are generally net long) by attempting to capture equity risk premium.

### **1.3.5 Global Asset Allocators**

1.3.5.1 Global asset allocators as a group may take positions in almost any security, commodity or derivative. This group has included some of the largest and most famous hedge fund managers, such as George Soros and has had the most press for some high profile transactions such as forcing the UK out of the European Exchange Rate Mechanism in 1992.

1.3.5.2 Some managers in this group attempt to add value in more modest ways, using value or other models to trade between a limited number of currencies, for example

### **1.3.6 Short Selling**

1.3.6.1 Almost all hedge fund strategies use short-selling to some extent. However, short sellers aim to provide returns by identifying frauds, gross-overvaluations or other negative information on a company and then shorting their stock. In a rising market, this group will generally find it difficult to provide very good returns, and in a falling market they will tend to find it much easier. However, even if an investor's philosophy is based on a view that equities in general will outperform bonds over the long-run, this group can provide an alternative source of active return.

### **1.3.7 Emerging Markets as a Hedge Fund classification?**

1.3.7.1 Some investors consider emerging markets equities and bonds as a type of hedge funds. This arises due to their perceived low correlation with developed market equities and bonds and the niche nature of many funds investing in these asset classes.

1.3.7.2 In this paper, we have not considered emerging markets as a type of hedge fund investment.

## 2. Should an investor allocate to hedge funds?

### 2.1 Introduction

- 2.1.1 Hedge funds are actively managed. It is worth noting that there is a considerable body of empirical evidence that points to active managers (at least on average) not being able to outperform markets after transaction costs and fees are taken into account. Given this, and that many hedge fund strategies may suffer substantial transaction costs and fees, the starting point for an allocation to hedge funds should perhaps be one of scepticism.
- 2.1.2 Nonetheless, many investors do use active management. There is plenty of evidence that suggests that active managers do not, on average outperform passive benchmarks. However, rather than focus on the active versus passive management debate, we have instead decided to focus on reasons why, assuming you believe that you can find managers that can outperform an appropriate passive benchmark, hedge fund investments may or may not be appropriate.
- 2.1.3 Many large and sophisticated investors invest in hedge funds or have expressed a desire to do so (including CALPERS and ABP, two pension schemes that each control over \$100 billion and many US endowments that allocate significant percentages of their assets). Nonetheless, there are many large and sophisticated investors that do not use hedge funds.
- 2.1.4 It is now widely accepted that the liabilities of defined benefit pension (as well as a large proportion of insurance liabilities) are most closely matched by a portfolio of bonds (see for example Dyson & Exley 1995; Exley, Mehta & Smith 1997). UK pension schemes, however, continue to have a high asset allocation to equities despite their being little evidence of linkage between equities and salary-related liabilities (see for example Smith 1998). In theory, investment in equities allows employers to pay lower contributions now by anticipating future expected outperformance of equities over bonds (while accepting the risk of having to increase contributions in the future if equities return relatively less than expected). The counter view is that shareholders suffer equity risk without the full upside, and that shareholders could achieve full upside on their own account. Arbitrage arguments such as these have been used to demonstrate that equity investment via a pension fund is inferior to use of bonds, from a shareholders' standpoint.
- 2.1.5 Many of the arguments for investment in hedge funds are the same as those for or against investment in equities. Some hedge funds have a considerable component of equity risk or credit risk – these can be seen as an alternative to a traditional investment in these asset classes. However, other hedge funds can be seen as “pure” active management that provide an alternative source of higher or lower expected returns or as a method of gaining from other risk premia that may be inherent in some investments (such as liquidity risk or “corporate reorganisation” risk).
- 2.1.6 Another possible view of the use for hedge funds is in risk reduction rather than return enhancement. An investor might choose a hedge fund with a lower risk profile than equities in order to reduce risk. There is evidence that this is taking place - “Hedge fund investors showed an overwhelming preference for conservatively managed funds during the third quarter of 2000, according to Tass Research, the information and research subsidiary of Tremont Advisers” (Niki Natarajan, 15 Dec 2000, Financial News). Risk reduction could also be possible if hedge funds can offer more diversification within equities. For example an equity market neutral fund (i.e. a portfolio of equity futures and a market neutral fund) may be lower risk than a single actively managed traditional equity fund. Of course, investors can reduce risk

easily and effectively by simply switching a part of their portfolio to bonds or cash. Further, some hedge funds gear-up risks and result in an overall risk that is higher than for equity investments.

2.1.7 These ideas are explored further below.

2.2 Are absolute returns good for your portfolio?

2.2.1 Many pension funds are prepared to mismatch liabilities in order to achieve higher expected returns. Nonetheless, institutions rationally wish to take minimum risk (defined according to their circumstances and preferences) in targeting returns.

2.2.1 Most conventional risk measures such as variance of returns and semi-variance (down-side risk), reduce with increasing diversification. Therefore, for funds using these risk measures, sources of low correlation investment return (if these can be identified) should generally be considered as part of the investment universe.

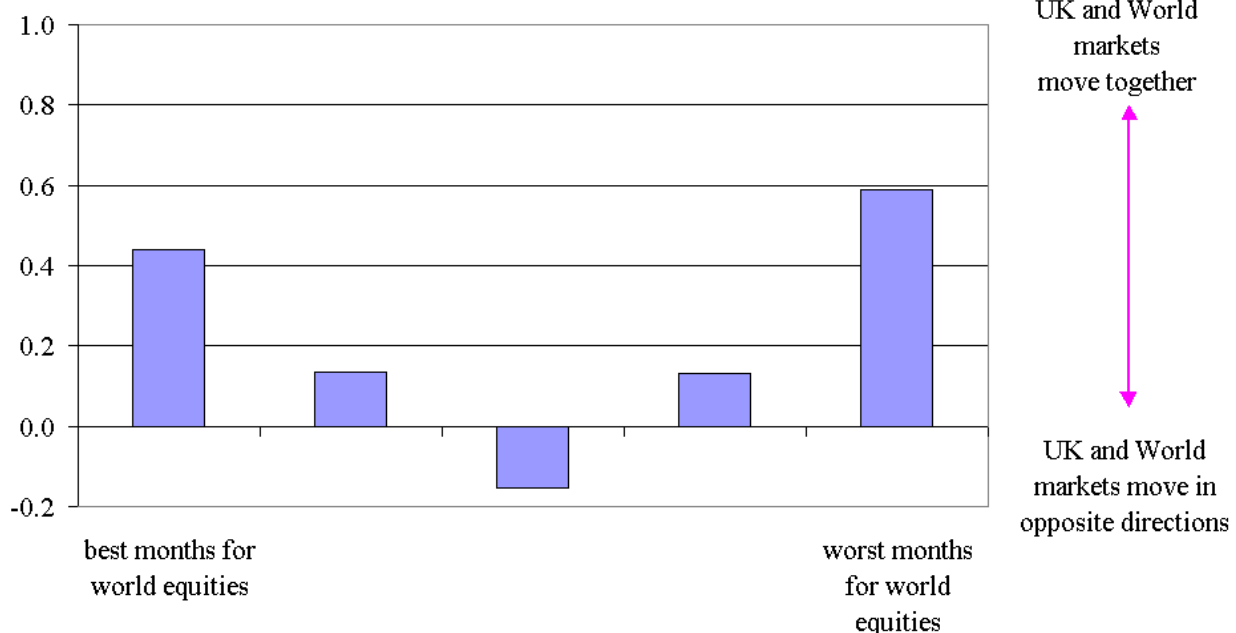
2.2.2 It is unsurprising that if you can add investments to your portfolio that:

- have low correlation with the other assets in your portfolio
- themselves have moderate volatility
- provide returns higher than other assets of similar risks

then the most efficient portfolio (in terms of risk/return trade off) contains considerable allocations to these investments at all but the highest and lowest risk levels (assuming the investments are not the highest returning or lowest risk asset included). It is not proven that such investments exist, or that if they do exist, it is possible to identify them accurately. Some discussion on the empirical evidence that the cost of finding such investments exceeds their incremental returns is contained in the paper “Market Efficiency” by Exley, Mehta and Smith, 1999. The alternative view is that hedge funds provide lower returns than other assets of similar risk, not higher returns.

2.2.3 The chart below shows the correlation between UK and World equity returns. This shows that in months when the market moves most strongly, arguably the time when diversification would be of most benefit, the correlation between UK and World (ex-UK) equities rises strongly.

Correlation between UK and World equities in different environments  
(January 1970 - June 2000)



### **2.3 Long-only portfolios are less efficient**

- 2.3.1 The restriction on no short-selling restricts a traditional investment manager's ability to add or subtract value, and also his ability to incur risk.
- 2.3.2 Grinold and Kahn calculated that the reduction in information ratio attributable to the long-only constraint could easily be as much as a 50% reduction for a manager with 4.5% active risk. This implies that many active managers would double their information ratio by allowing themselves to go short without any increase in risk.
- 2.3.3 The impact of the long-only constraint is highest when the universe of assets is large, asset volatility is low, the strategy has high active risk and the benchmark is skewed, with large weights in a few stocks and many securities with low benchmark weights.
- 2.3.4 Another view is that information ratios are not a relevant measure of performance, because of the mis-specification of the nature of investment risk. Further, since there is little evidence that traditional managers can add value, and most evidence suggests the opposite, a long-only constraint is not undesirable.
- 2.3.5 This may be particularly relevant for strategies that are closer in nature to "trading" than "investment management" and involve complex strategies and instruments.

### **2.4 Short-side information bias**

- 2.4.1 Brokers tend to issue less sell recommendations than buy recommendations. Research from Multex showed that 55% of research notes advise clients to buy, while only 8% advise to sell. 32% suggest holding and 6% give no recommendation.
- 2.4.2 Possible reasons for this are that issuing sell signals may upset relationships with corporate finance clients (or potential clients) or other clients that own the stock.
- 2.4.3 An alternative idea for this apparent anomaly is that buy recommendations have a larger "target market" (i.e. anyone with assets who may wish to invest in their recommendation) whereas sell recommendations are only targeting investors who already own the stock (because few people sell short).
- 2.4.4 Some types of information on companies are more naturally suited to short-selling (e.g. evidence of earnings manipulation).
- 2.4.5 In addition, the short-side may be less efficient as there are less investors able and/or willing to exploit any information they may have.

### **2.5 Breadth of skill and portable alpha**

- 2.5.1 Traditional portfolio construction only allows the use of active management in securities to which you want long exposure.
- 2.5.2 For example if your benchmark is 100% UK equities, and you wish to take risk against this benchmark, your choice in the long-only world is limited. You can appoint an active UK equity manager. Or you can introduce overseas equities tactically where you think that they will outperform.
- 2.5.3 Allowing the use of an absolute return fund unrelated to UK equities (for example a European market neutral fund with low correlation to UK equities) increases your options. Combined with a holding of UK equity market futures you can remain exposed to the systematic market risk with active returns delivered separately.
- 2.5.4 By separating the market risk from the manager's active risk, this means that you can identify manager skill in any asset class whether it is part of your benchmark or not.



This means that if you can find managers with skill at managing any asset class, portfolios may be able to take advantage of this, regardless of their benchmark.

## **2.6 Clarity of sources of return**

- 2.6.1 Separating out manager skill from benchmark allows your investment managers to concentrate purely on adding return without being tied to a benchmark that they may have little interest in.
- 2.6.2 Some hedge fund strategies (for example equity market neutral) aim to strip out exposures to the underlying market entirely. In this case we have a pure “alpha” (outperformance) strategy with no “beta” (market exposure). It is worth noting that even here, there will always remain some exposure to “risk factors” (for example, a growth or value bias, or a bias towards stocks with increasing earnings forecasts).
- 2.6.3 Other strategies have much clearer exposures to the underlying capital markets. For example an Equity Hedge manager may consistently have positive exposures to the equity markets.

## **2.7 Skilful managers may prefer to run hedge funds?**

- 2.7.1 There have been several cases of successful proprietary traders or fund managers setting up hedge funds outside their previous employer’s investment bank or fund management operation. The lure of making more money, having independence and looking after their own (often considerable) wealth may be at the heart of this.
- 2.7.2 It is possible to argue that skilful managers will prefer to manage portfolios that best show their skill (i.e. with very limited benchmark constraints) and for which they get best paid.
- 2.7.3 Nonetheless, higher fees may not just attract the most skilful managers, but all managers who see this as an opportunity. Talk of high demand and limited capacity may make managers believe that they can launch a fund at high fees and be certain of attracting clients, whatever their skill.
- 2.7.4 The issue remains for investors of whether these higher fees, combined with additional risk, offset the potential gain from superior investment management skill. A detailed study to date of hedge fund performance, from London Business School, presents evidence that hedge funds underperform passive strategies. This study, entitled, “Performance Evaluation of Hedge Funds with Option-based and Buy-and-Hold Strategies” by Vikas Agarwal and Narayan Y. Naik, concluded that “35% of the hedge funds have added significant value in excess of monthly survivorship bias of 0.3%”.

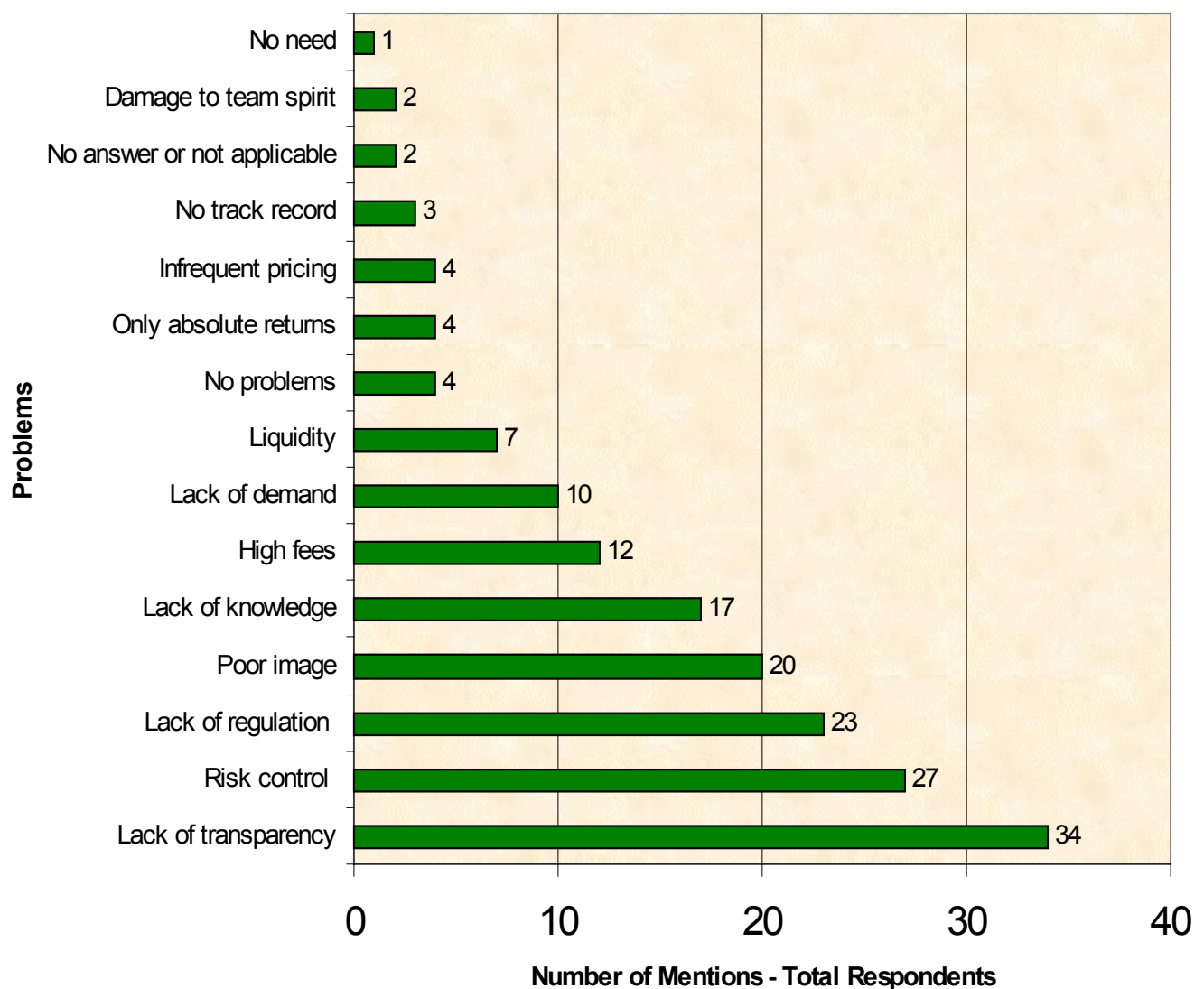
### 3. Fear Factors

#### 3.1 Background

- 3.1.1 At the current time allocations to hedge funds are low or zero. Some institutions may believe that active management cannot add value to their portfolio, but the majority do allocate to active management. The agency issues that lead managers and advisors to prefer equity oriented strategies are also no less for hedge fund investment. So why do they not use hedge funds?
- 3.1.2 We have identified a number of fear factors that may have prevented this allocation taking place. These have come from external survey results, informal surveys of institutions and a survey that we have carried out among UK investment consultants. We will come on to explore whether or not these fear factors are justified.

#### 3.2 Survey results

- 3.2.1 A recent survey of European institutions (primarily insurance companies) by Ludgate Associates highlighted a number of fear factors. The most mentioned factor preventing hedge fund investing was lack of transparency, followed by lack of risk control and poor regulation.



3.2.2 A limited survey of 29 investment consultants showed that 59% of investment consultants would advise clients to use hedge funds, although some would have reservations. The preferred method was through a fund of hedge funds to diversify active management risk. The top 5 ‘fear factors’ or barriers to holding hedge funds from this survey were:

1. Lack of Liquidity
2. Trust law and other legislative concerns
3. Taxation problems
4. Lack of risk controls
5. Security of assets

The results were quite variable, and it is possible that a larger sample would produce quite different results. Reasons for not investing in hedge funds that were not included in the survey were ‘too risky’ and ‘doesn’t match liabilities’.

3.2.3 Recent articles in the financial press, which may have been read by the decision makers within institutional investors, illustrate some of the issues to hedge fund investment. These include the lack of transparency, expenses and complexity (Kanesh Lakhani: NAPF conference 2000); performance measurement (Pirkko Juntunen: 27 Dec 2000); as well as limited capacity (Phillip Coggan: Financial Times, Nov 27, 2000). The issue of capacity is concerning a number of observers, given “expectations of mass closures [of hedge funds] across the sector, which has been deluged with huge investment inflows” 5 Jan 2001 (The Times).

3.2.4 This analysis, combined with our own experiences has lead us to believe that the following factors are uppermost in investor’s minds in preventing increased allocations.

### 3.3 Education

**3.3.1** For any unfamiliar investment to be understood in order that a reasoned decision to invest or not invest can be made, a number of stages of education need to take place. In particular, fiduciaries and other investment decision makers will need to understand the advantages and disadvantages that any investment strategy can bring them. In addition, they will also need to feel confident in the detail of the strategy that is being employed.

**3.3.2** Many strategies use complex derivative strategies in involved ways. Some are similar to traditional long-only strategies but also use leverage and short-selling, while some may be more similar to short-term capital markets proprietary “trading” than the longer term “investment management” with which institutions are familiar.

**3.3.3** Even if they wish to allocate to hedge funds, institutions may struggle. Most traditional investment advisors do not have the experience or resource to advise their clients on an appropriate choice of individual hedge fund managers. This is partly to do with understanding the investment process and partly to do with the other factors that they perceive. While a number of the larger UK actuarial and investment consultants are following a strategy of researching fund-of-funds rather than individual funds, someone will still need to pick the underlying managers.

### 3.4 Do you believe the numbers?

3.4.1 Many of the reasons supporting an investment in hedge funds are based on the attractive looking risk and return statistics that are presented. However, these statistics may not always have been subject to a high level of academic rigour and may not tell the full story. Some of the studies which have attempted to control for many of the risks arising from

hedge fund investment demonstrate adverse performance – see for example the London Business School study.

3.4.2 Historical hedge fund return data is not of comparable quality to that available for individual securities or standard asset classes. This means we need to be very cautious about using this data to parameterize models or to create inputs into existing models (such as mean-variance optimizers).

3.4.3 Fung and Hsieh (2000) discuss the biases that may exist in hedge fund index returns and their magnitude. There is a summary in the table below. The magnitude of the bias refers to the historical average return on a broad-based index of all hedge funds. However, the same issues apply to sub-indices of hedge fund strategies. Biases will also affect estimated risk levels, generally biasing them lower.

Summary of Data Biases in Historical Hedge Fund Data

Bias	Cause	Estimated Magnitude
Survivorship	Funds that ceased operations during the sampling period are excluded	3.0% pa
Selection	<ul style="list-style-type: none"> <li>Only “good” funds get put in a database.</li> <li>Some funds may “self-exclude” if they are not actively seeking capital.</li> <li>Hedge funds only report to one database</li> </ul>	
Instant History	Historical data is backfilled when a fund enters a database	1.4% pa
Weighting Scheme	The choice of equal-weighting (HFR, EACM) vs. value-weighting (CSFB/Tremont) will lead to differences in reported returns	

3.4.4 This magnitude of survivorship bias is reinforced by other studies. Some one in five hedge funds stop trading each year, most often because of poor performance. Brown, Goetzman and Ibbotson in “Offshore Hedge Funds: Survival Performance 1989-1995”, noted that reported performance returns need to be reduced by 3%pa as a result of survivorship bias effects. This would be an underestimate to the extent that, as noted above, exit is conditional on underperformance and the performance period did not cover a market crisis event.

3.4.5 There is also an issue of “Access Bias” that investors may face. Some of the best performing funds (that push up the averages) may have already reached capacity and hence not be available for investment.

3.4.6 In addition, some studies (see, for example, UBS Warburg, In Search of Alpha) suggest that smaller funds perform better than larger funds.

3.4.6 Generally, measurement of hedge fund risk is a huge issue. There are literally myriads of pure investment risks arising from investing in the capital markets. A simple swap will include separate interest rate and liquidity risks at each point of the yield curve up to maturity, besides credit risk if collateral or other arrangements fail. An interest rate swaption will additionally incorporate a matrix of volatility risk positions. Any of these risks may

warrant a risk premium, and hence a deduction from reported returns when making market value risk adjustments. The investor in the fund is unlikely to have the resources or information to make such risk adjustments. The paper “Measurement of Investment Performance” by Mehta and Armitage (prepared for the 2000 Investment Conference) discusses some of the measurement difficulties with, and approaches that can be taken to gauge, risk adjustment of manager performance. This approach was taken by the London Business School study referred to earlier.

3.4.7 Overall risk as measured by standard deviation is also often understated because managers have a vested interest in smoothing returns and because the mark to market positions of illiquid securities and over-the-counter trades are often not known with accuracy.

3.4.8 It is difficult to prove that a particular hedge fund manager has skill. The available evidence suggests that one manager is as likely to outperform or underperform as another (Brown, Goetzmann and Ibbotson).

### **3.5 Decision making framework**

**3.5.1** Pension fund investment decision making often follows a process along these lines:

- a. Set Asset Allocation: based on liabilities and risk tolerance.
- b. Determine Investment Manager Structure: active or passive management, style of investment management, performance benchmarks.
- c. Review, appoint and monitor managers.

**3.5.2** Hedge funds do not fit easily into this structure as they do not represent an asset class in the traditional sense. As a group, they do not share particular characteristics in the same way as equity managers, fixed income managers, property managers or even private equity managers.

**3.5.3** Rather than consider investment manager structure on an asset class by asset class basis, managers with the highest expected information ratios could be selected, regardless of asset class. A discussion of the potential issues with the use of Information Ratios is included in 3.5.6. The asset allocation is managed to compensate for the systematic exposure that the chosen managers introduce. The amount allocated to active management is decided by the overall risk tolerance.

**3.5.4** For example, assume that:

You do not wish to have exposure to Japanese equities.

Liquid futures with low tracking error are for UK Gilts, an asset class to which you want exposure.

You can find a manager with excellent Japanese equity stock selection skill, but no manager with skill at selecting UK Gilts.

This skill can be efficiently captured through a market neutral strategy run by this manager that has no correlation with the Japanese equity market (or any other market). To give the asset class exposure to UK gilts, futures can be used.

This separation of source of excess return and market exposure is known as “transferrable alpha”.

**3.5.5** An alternative decision making framework that of maximising value for the stakeholders has been suggested in Exley, Mehta & Smith 1997. This could have quite different implications for asset allocation and investment manager choice, since traditional approaches are very sensitive to subjective views of risk and return.

**3.5.6** Information ratios are not a complete measure of performance, both for active management generally and hedge funds investment in particular:

- The numerator is return relative to, for example, an equity return index. In practice, managers have a wide range of strategies and generate multiple risks for investors. One of the findings of modern finance is that the expected excess return on equities is not simply the result of the Capital Asset Pricing Model “beta” but also arises from other risks such as arise from interest rates, inflation, liquidity and market crashes. An investment manager who is aware of the limitations of beta can, for example, write out of the money put options and generate consistent year by year positive performance, whilst exposing his fund to large extreme downside risk. Each of the other limitations of strict CAPM can similarly be exploited and not allowing for these risks in the performance measure will result in arbitrary results in much the same way as if one were to measure the performance of a dollar equity fund manager by deducting returns on the FTSE.
- In a hedge fund context, as soon as one allows leverage, short positions and complex derivatives strategies, the potential to manipulate information ratios increase even more.
- For example, with performance measured relative to the FTSE, the manager is incentivised to leverage on alternative sources of unmeasured risk and return – such as on interest rates, credit risk and market volatility.

The scope for manipulation can be gauged when one compares the overall level of positive reported information ratios (at least prior to deducting survivorship and other biases) with the conclusions stemming from the London Business School study that 65% of hedge funds underperformed passive strategies.

### **3.6 Transparency**

3.6.1 When the investment management function is delegated to an outside party, pension funds and insurance companies require their investment managers to explain their management style and set out their stock-level holdings in detail. Without this information they do not feel that their fiduciary or other responsibilities have been fulfilled. Hedge fund managers provide variable (and offer poor) levels of information about their strategy, the risks inherent in it (in particular the degree of leverage) and the counterparties with which they transact.

For many hedge fund strategies, transparency is about much more than “getting comfortable” with the strategy and whether the manager has repeatable skill. If a manager is not working within a major reputable financial institution, institutions may not be comfortable that the information on the strategy and security of assets is accurate or reliable. There have been several high profile hedge fund failures where full transparency would have significantly reduced the chance of failure.

- 3.6.1 Long Term Capital Management did not disclose details of their strategy because it was proprietary. More worryingly, their investors were not aware of the degree of leverage being employed and were surprised to find that their overall level of leverage had been over 100 times when they failed. Their investors did not have a chance to understand or be prepared for the risks they were taking.
- 3.6.2 If a strategy is managed by a financial institution that is not sufficiently financially strong to make good losses from trading outside of guidelines, then frequent and full transparency may be the only way that investors can be confident to invest.
- 3.6.3 We discuss liquidity in more detail below, but it is worth noting that transparency is of limited value without liquidity. Transparency might allow you to see that the manager is not within guidelines (perhaps on leverage or instruments used), but if you cannot remove capital or otherwise reduce your exposure for several months, this is of little comfort.

- 3.6.4 In practice, even with complete disclosure of every hedge fund position on a continuous basis, a complex derivatives analytical framework needs to be employed in order to understand the risk implications of fund strategy. This type of analytical framework is employed by large investment banks on their derivative desks, but most fund and fund-of-fund managers will not have the resources to devote to this analysis. Trustees will be equally ill-equipped.

### **3.7 Security**

- 3.7.1 Many hedge funds are based offshore in locations which are lightly regulated. Trustees of UK pension funds are bound by the requirements of the Pensions Act that tends to encourage the use of managers and types of investments that are regulated under the Financial Services Act. For direct investments not covered by the Financial Services Act, trustees are required to obtain written advice from a suitably qualified person before making such investments and when reviewing those investments.
- 3.7.2 As mentioned above, many consultants are unlikely to be familiar with most hedge fund managers and therefore unable to comment on the suitability of a particular organisation or investment type. As a consequence, trustees may face problems of liability should the hedge funds that they select subsequently fail.

### **3.8 Liquidity**

- 3.8.1 Many hedge funds are open for investment and disinvestment infrequently (often quarterly), require long notice periods (e.g. 30 days) and have long settlement periods (e.g. 30 days).
- 3.8.2 In addition, many hedge fund strategies use illiquid instruments and the hedge fund managers may suspend liquidity at any time if they feel it is in the interests of the fund. As they often have a considerable portion of their own money invested in the fund, and benefit from performance related fees, this may happen more often than investors may expect.

### **3.9 Lack of risk controls**

- 3.9.1 As noted above, there are a large number of investment risks arising from investing in the capital markets. For example, risks from investing in traditional asset classes such as equities, government and corporate bonds, and cash deposits are augmented and magnified by the use of leverage, and a wider range of instruments.
- 3.9.2 Understanding and controlling, or at least monitoring these risks requires detailed data on positions taken and knowledge and experience sufficient to draw conclusions from this analysis. Most investors and managers do not have the capabilities or expertise required to monitor these risks, even if provided with the data.

### **3.10 Fees**

- 3.10.1 The management fees associated with hedge funds tend to be high. These will generally be expressed in terms of a basic ad valorem fee (e.g. 1% or 2% pa) and a performance-related fee. The performance related fee is often 20% of absolute performance or performance above a hurdle rate. It is increasingly common for managers to use a hurdle rate greater than zero (e.g. x% basic plus y% of any performance above 10% or above LIBOR) and a high water-mark (earn performance fee only for net new upside).
- 3.10.2 We are aware of one (retail) hedge fund that charges 2% + 50% of outperformance, his fund is at capacity and has an outstanding reported performance record.
- 3.10.3 In addition, fund-of-fund managers will apply a further ad valorem and performance related fee. This could be a further 1% plus 10% of performance above the hurdle rate.

3.10.4 In comparison to traditional management fees for institutions these fee structures appear very high.

Fund manager Type	Total Ad Valorem fee	Total Performance fee	Net <b>active</b> performance target	Approx Fee
Passive Manager	0.15%	0%	0%	0.15%
Low Risk Active Manager	0.30%	0%	1%	0.30%
High Risk Active Manager	0.60%	0%	2%	0.60%
Hedge Fund	1%	20%	10%	3.50%
Fund of Hedge Funds*	2%	30% (approx)	8%	5.4%

Based on this table, we can see that if the fund-of-fund returns a total of 13.4% over a cash benchmark, then the total fee will be of the order of  $2\% + 30\% \times (13.4\% - 2\%) = 5.4\%$ .

But does this tell the whole story? There are a number of other comparisons that may be relevant.

3.10.5 In comparing investment managers or strategies, the net (after-fee) investment return and risk is key. If the net return after appropriate risk adjustment is attractive, then a high fee should not prevent allocations.

3.10.6 There is a natural tendency to not appoint providers where the fee “feels” unreasonable, and the recipient is “getting rich at our expense”. However, if a hedge fund manager manages assets of only £50 million, a fee of 3.5% may not result in “unreasonable” profits for the hedge fund manager once his or her expenses have been taken into account.

3.10.7 There is an argument that active managers should be only paid an active fee for the portion of the portfolio that reflects their views. In any risk-constrained long-only portfolio there will be a portion of the portfolio that does not reflect the manager’s views but that has to be included by virtue of the benchmark chosen and the target risk. This “passive” portion could be as high as 60%, even for a “high risk” active manager. The fee per £ of active money (1.5% pa based on the example above) leaves a hedge fund manager with as 2-3 times as expensive, but does not paint such a stark picture.

3.10.8 Grinold and Kahn in “Active Portfolio Management”, propose that net information ratio (the ratio between excess after-fee return and standard deviation of returns) is the key to active management. This implies that if a manager gives a high net information ratio, they should be included in your portfolio whether the fee “feels” high or not as long as you are comfortable with the sustainability of this information ratio.

3.10.9 Investors that allocate using ideas of “risk-budgeting”, will determine value added is the information ratio. Managers that exhibit higher information ratios are therefore very valuable. As illustrated in section 2.2 for a given level of skill, allowing managers to go short increases the information ratio by as much as two times. At higher risk levels this increase can be significant. In effect, if you can identify hedge fund managers with similar skill levels as long-only managers, you can obtain higher net expected returns for the same level of risk (as measured by standard deviation of returns). The level of fees should be of less relevance.



- 3.10.10 In their paper, Measurement of Investment Performance, Armitage and Mehta examine the standard literature on portfolio performance measurement and note that most authors view risk adjustment as far too complex to be encapsulated in a single measure such as the information ratio. Given the difficulty of measuring whether or not a manager is adding value, the level of fees assumes a very high relevance, as other criteria are suspect.
- 3.10.11 As with other performance-related fees, it is important to consider how years of negative returns are to be addressed and how to avoid encouraging the manager to "game" the portfolio in order to maximise his fee. Some solutions have been proposed where the fee depends on risk adjusted performance and this is attractive in theory. However, the practical aspects of this are much more complex. Nonetheless, it is important to have the controls in place to monitor the managers risk levels to ensure that this gaming is not taking place. Accurate measurement of this requires a huge investment in derivative technology and systems.
- 3.10.12 In effect the fund is short a call option to the managers. The value of this call option, and movements therein, are not deducted from the value of the fund. Effectively, the managers have a 20% stake in the upside with no downside risk. The value of the call option increases as the fund takes more risk. The positive (performance) and negative (risk taking, fraud) incentives created by this fee need to be weighed up.
- 3.10.13 By definition, existing hedge fund investors are prepared to pay the fees, perhaps believing they get attractive net-of-fee returns. One view is that the "right" level of fees for a product is what people are happy to pay and managers are happy to make. Another view is that it seems logical that the "right" level of fees should bear some relation to the additional return expected from active hedge fund management.
- 3.10.14 Hedge funds generally have limited capacity and demand is increasing globally. Therefore, managers have little incentive to reduce fees.

## 4. Modelling with hedge funds

4.1 There are two choices when modelling:

4.1.1 Treat hedge funds as a separate asset class and include in an asset-liability modelling study when setting investment strategy.

4.1.2 Consider hedge funds to have the same characteristics as the asset class to which they are benchmarked (e.g. cash, equity, bonds) with an additional layer of risk (tracking error) and potential for outperformance (alpha).

### Modelling hedge funds as a separate asset class

When modelling hedge funds as a separate asset class it is first essential to understand the historical performance. Set out below is performance data collated by HFR, which has been used for convenience, as it is freely available from their website. Note that these are not risk-adjusted in any way, nor do they have any allowance for the biases we referred to in section 3. We have set out the correlation, relative return, relative risk and information ratio (relative risk/ relative return) of monthly returns for each of the main classes of hedge fund. The performance has been calculated first relative to index-linked gilts and then relative to UK equities. Note these are monthly statistics, so annual returns may be 12 times bigger, with annualised standard deviations and information ratios root-12 times bigger.

### Historical Unadjusted Monthly Return –Hedge funds vs Index-Linked Gilts

	Convertible Arb	Distressed Sec	Equity Hedge	Equity Neutral	Equity non-hedge
Correlation	0.18	0.05	0.07	0.12	0.20
Relative return	0.21	0.53	0.40	0.16	0.93
Standard deviation of relative return	2.02	2.64	3.03	2.05	4.16
Skewness of relative return	-0.53	-0.94	-0.20	-0.70	-0.55
Kurtosis of relative returns	2.12	2.74	1.32	1.85	1.60
Minimum relative return	-3.26	-5.76	0.97	-1.38	1.25
IR	0.11	0.20	0.13	0.08	0.22

	<b>Event Driven</b>	<b>Fixed Income</b>	<b>Macro</b>	<b>Market Timing</b>	<b>Merger Arb</b>
Correlation	0.13	0.10	0.34	0.20	0.11
Relative return	0.58	0.19	0.74	0.52	0.30
Standard deviation of relative returns	2.54	2.12	2.73	2.48	2.21
Skewness of relative returns	-1.09	-0.64	0.15	-0.34	-1.00
Kurtosis of relative returns	3.58	2.76	0.25	1.50	2.87
Minimum relative return	-2.81	-4.05	-2.69	-2.58	-0.45
IR	0.23	0.09	0.27	0.21	0.14
	<b>Relative Value</b>	<b>Short Selling</b>	<b>Combined</b>		
Correlation	0.07	-0.16	0.21		
Relative return	0.40	-0.62	0.42		
Standard deviation of relative return	2.19	7.14	1.98		
Skewness of relative returns	-1.08	0.03	-0.84		
Kurtosis of relative returns	3.76	0.63	2.86		
Minimum relative return	-2.00	-6.37	-2.43		
IR	0.18	-0.09	0.21		

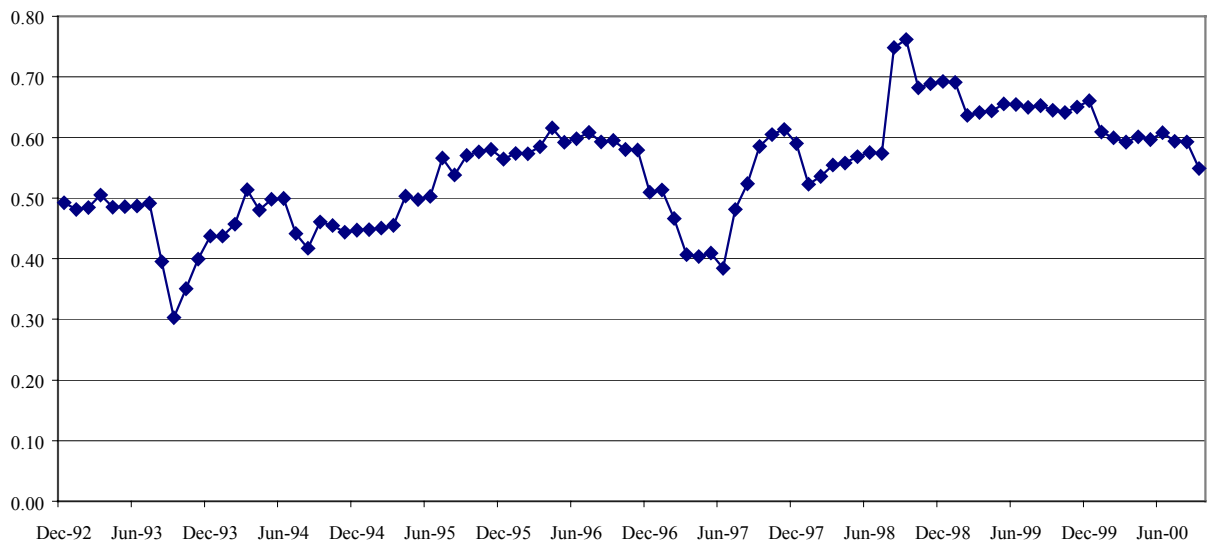
### Historical Unadjusted Monthly Return –Hedge funds vs Equities

	<b>Convertible Arb</b>	<b>Distressed Sec</b>	<b>Equity Hedge</b>	<b>Equity Neutral</b>	<b>Equity non-hedge</b>
Correlation	0.34	0.44	0.49	0.11	0.61
Relative return	-0.17	0.14	0.66	-0.23	0.55
Standard deviation of relative return	3.89	3.70	3.64	4.12	3.62
IR	-0.04	0.04	0.18	-0.05	0.15
	<b>Event Driven</b>	<b>Fixed Income</b>	<b>Macro</b>	<b>Market Timing</b>	<b>Merger Arb</b>
Correlation	0.50	0.45	0.51	0.49	0.33
Relative return	0.19	-0.19	0.35	0.13	-0.09
Standard deviation of relative return	3.56	3.76	3.59	3.60	3.89
IR	0.05	-0.05	0.10	0.04	-0.02
	<b>Relative Value</b>	<b>Short Selling</b>	<b>Combined</b>		
Correlation	0.35	-0.53	0.52		
Relative return	0.02	-1.00	0.03		
Standard deviation of relative return	3.87	9.43	3.70		
IR	0.00	-0.11	0.01		

These numbers are not universally seen as providing useful information for investment decision making. Hedge funds are exposed to a variety of risks, including shock events and hence standard deviations are likely to be misleading. The statistical robustness of reported results depends on the basic return data and the basis of the collection of this data and any in-built biases has not been examined.

The chart below shows how the rolling 36 month correlation between hedge funds and the FTSE all share index has varied.

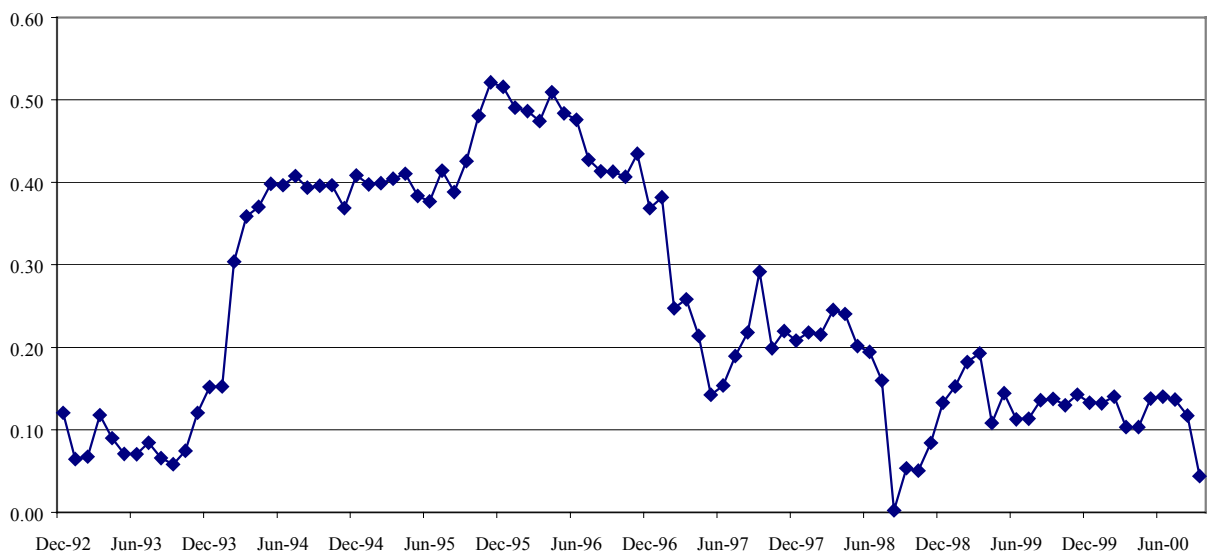
### FTSE All Share vs FoF - 3 year rolling correlations



This analysis indicates that although the correlation over the last ten years has averaged only 0.5 it has crept up as high as 0.75 at times. This was around October 1998 when a liquidity crunch hit both equity markets and hedge funds simultaneously.

The chart below shows the same analysis but for index-linked gilts against hedge funds. Here a high correlation is beneficial as it means the volatility of returns relative to your liability movements will be lower. Although the correlation was up at around 0.4 to 0.5 for part of the period unfortunately just as index-linked gilt yields began to fall (and hence liability values rise) in late 1997 and 1998 the correlation fell rapidly down to zero. All in all not great news for hedge funds as a whole.

### FTSE Over 5 year ILG vs FoF - 3 year rolling correlations

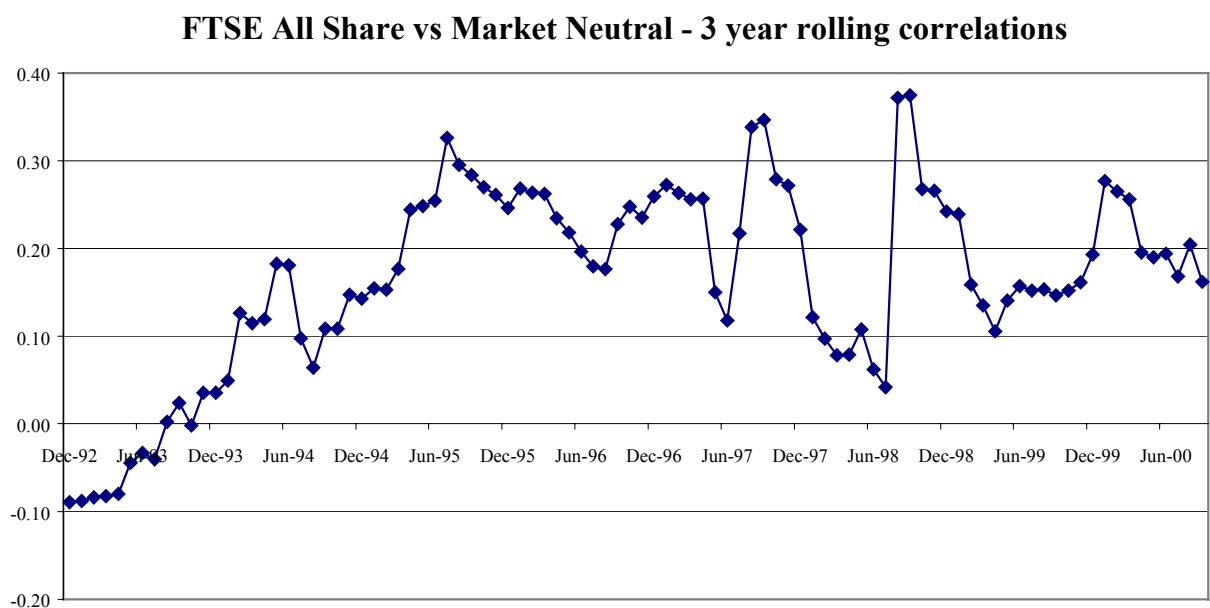


As hedge funds have a lower volatility than equities things may not be all bad. The next table compares the relative returns for index-linked gilts against equities and hedge funds. This table appears to indicate that hedge funds have represented a safer bet than equities over the last ten years or so, with a similar level of outperformance but significantly lower

volatility. However, hedge funds and markets have multiple risks. A single risk measure, unless carefully constructed, fails to capture overall risk, even if hedge fund returns were properly measured. The latter is particularly important in the context of reported returns which do not allow for the option cost of granting managers a performance related fee, nor allow for survivorship and other biases of 3%pa or more.

Jan 1990 – Sept 2000	Equity return	Hedge combined return
Monthly returns	vs index-linked gilts	vs index-linked gilts
Percentile		%
	%	
Min	-12.57	-8.01
5 <sup>th</sup>	-5.53	-2.89
10 <sup>th</sup>	-3.92	-1.51
25 <sup>th</sup>	-1.46	-0.45
50 <sup>th</sup>	0.37	0.51
75 <sup>th</sup>	2.76	1.41
90 <sup>th</sup>	4.63	3.05
95 <sup>th</sup>	5.84	3.74
Max	11.00	4.68

Next we consider whether any of the individual hedge fund categories represent a more attractive asset class. Based on correlation the most obvious category would appear to be the Equity neutral category, which has a close to zero correlation to equities over the ten-year period considered. The following chart plots how this has changed over the period with a rolling 36-month window:



Here again the correlation has varied over time, but in this case it has at least remained below

0.4 over all rolling 36-month periods and is only above 0.3 on a few occasions. This category could therefore be considered diversified source of (positive or negative) alpha.

### **How much positive or negative alpha can be expected?**

Instead of answering this question, an alternative is to ask how much alpha is needed. This is considered in the context of investment in Equity Market Neutral funds, for which we have assumed a low correlation and low standard deviation of returns in line with the above data.

It should be noted that many practitioners believe that the data, assumptions and methodology used in the following section are inappropriate for the purpose of drawing hedge fund allocation conclusions. The data inaccurately or failed to fully account for manager fees and survivorship bias. Small changes to the assumptions used would have led to radically different and opposite conclusions. The actuarial methodology adopted gives a misleading impression of risk and optimal strategy, because of the effects of compound interest over a long time horizon.

We have projected the ongoing funding level of a typical UK pension scheme. We have assessed the finances of the pension plan by considering the funding level at the end of ten years. These results are presented in the form of the 'Upper Quartile' (25<sup>th</sup> percentile), the 'Median' (50<sup>th</sup> Percentile), the 'Lower Quartile' (75<sup>th</sup> percentile) and the '95<sup>th</sup> percentile'.

- the 'Upper Quartile' is the outcome which has an estimated 25% probability of being exceeded. There is a 75% probability of an outcome worse than the Upper Quartile
- the 'Median' outcome is that for which it is equally likely that the actual funding level will be either higher or lower
- the 'Lower Quartile' indicates the funding level which has an estimated 75% probability of being exceeded. There is a 25% probability of an outcome worse than the Lower Quartile
- the '95<sup>th</sup> Percentile' is the outcome that has the lowest funding level, after elimination of the least favourable 5% of results. This is the result we would expect to be bettered in 95% of situations.

The assumptions for expected real returns used for assets other than hedge funds were:

	<b>Real Return Assumptions</b>
	<b>% pa</b>
UK equities	4.75
Overseas equities	5.0
Property	3.5
UK long dated conventional gilts	2.5
Overseas bonds	2.5
UK index-linked gilts	2
Cash	2

The starting asset allocation was taken as the CAPS average asset allocation as at 31/12/00:

	<b>Asset Allocation</b>
	<b>%</b>
UK equities	51
Overseas equities	22
Property	2
Conventional gilts	13
Overseas bonds	4
Index-linked gilts	5
Cash	3

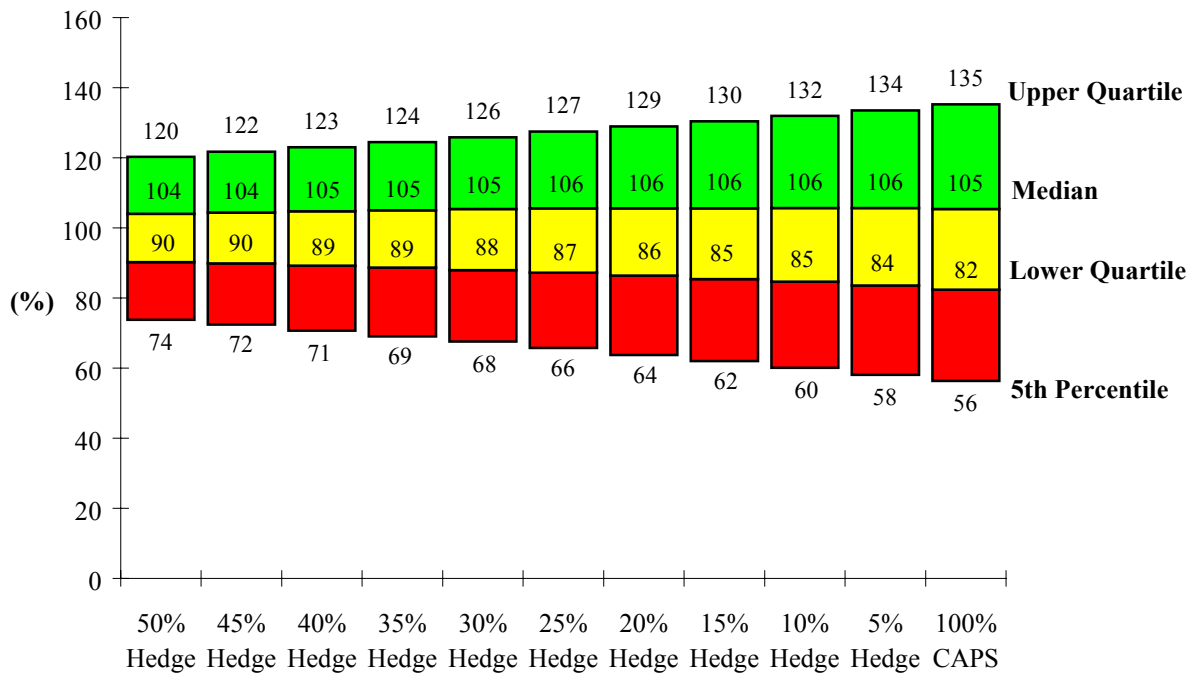
We examined the impact of replacing this portfolio with a portfolio of hedge funds using a market neutral strategy, in 2.5% increments. Three scenarios were examined:

- 0 hedge funds produce a return of 4% real (cash plus 2%)
- 1 hedge funds produce a return of 3% real (cash plus 1%)
- 2 hedge funds produce a return of 2% real (cash)

This compares to the return of cash plus around 5-6% that these strategies have returned over the last ten years. The charts below show the projected ongoing funding level after ten years for each of these scenarios. For comparison, we have also shown the impact of replacing the CAPS portfolio with the an increasing allocation to corporate bonds, which are assumed to produce a return 1% p.a. in excess of gilts.

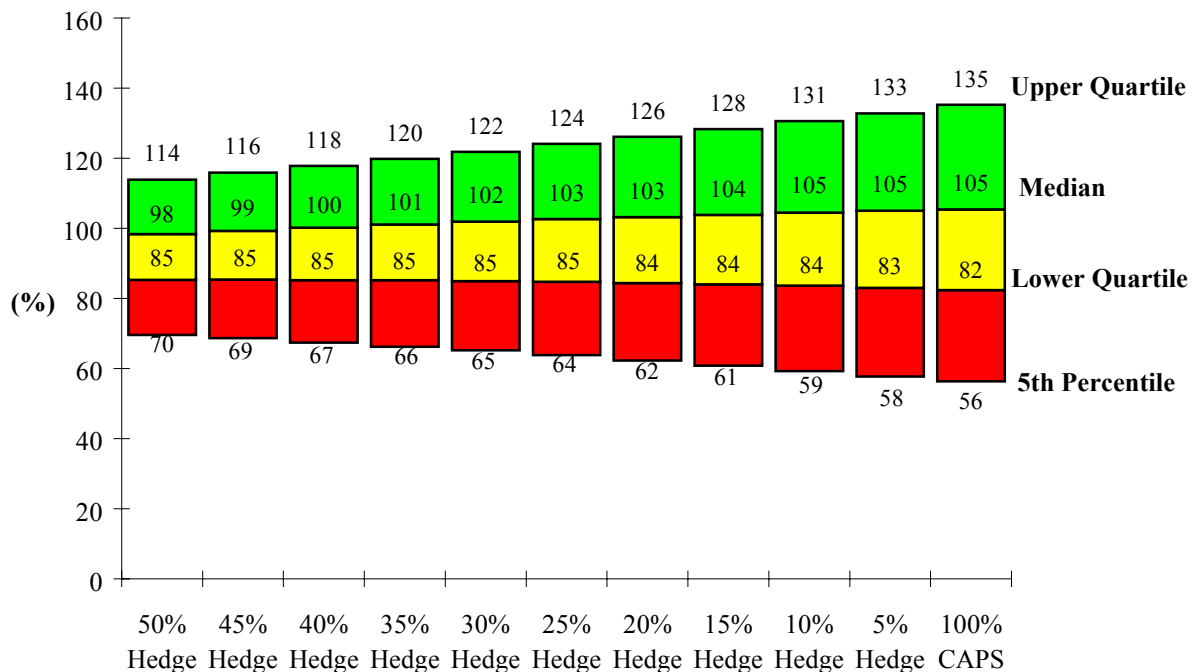


### CAPS average replaced by Hedge Funds with a 4% real return



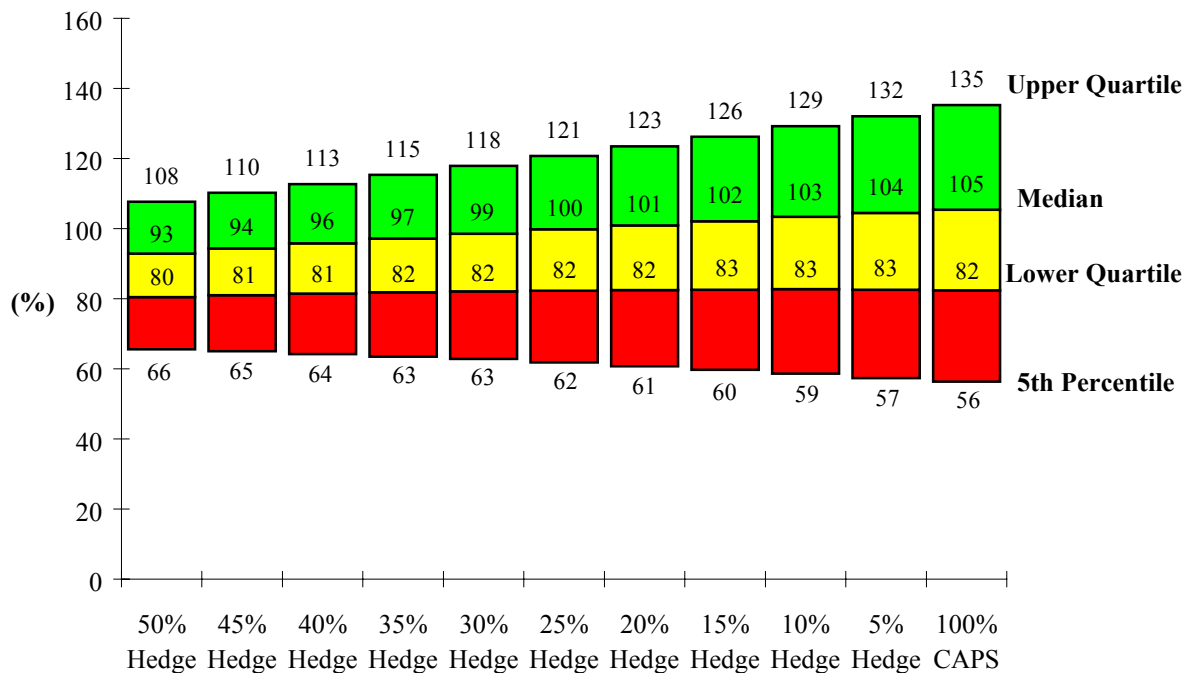
Here we see that with a 4% return the impact of adding Equity Neutral hedge funds is positive both in terms of an improved median return and a reduced level of risk as exhibited by the lower quartile and 5<sup>th</sup> percentile.

### CAPS average replaced by Hedge Funds with a 3% real return



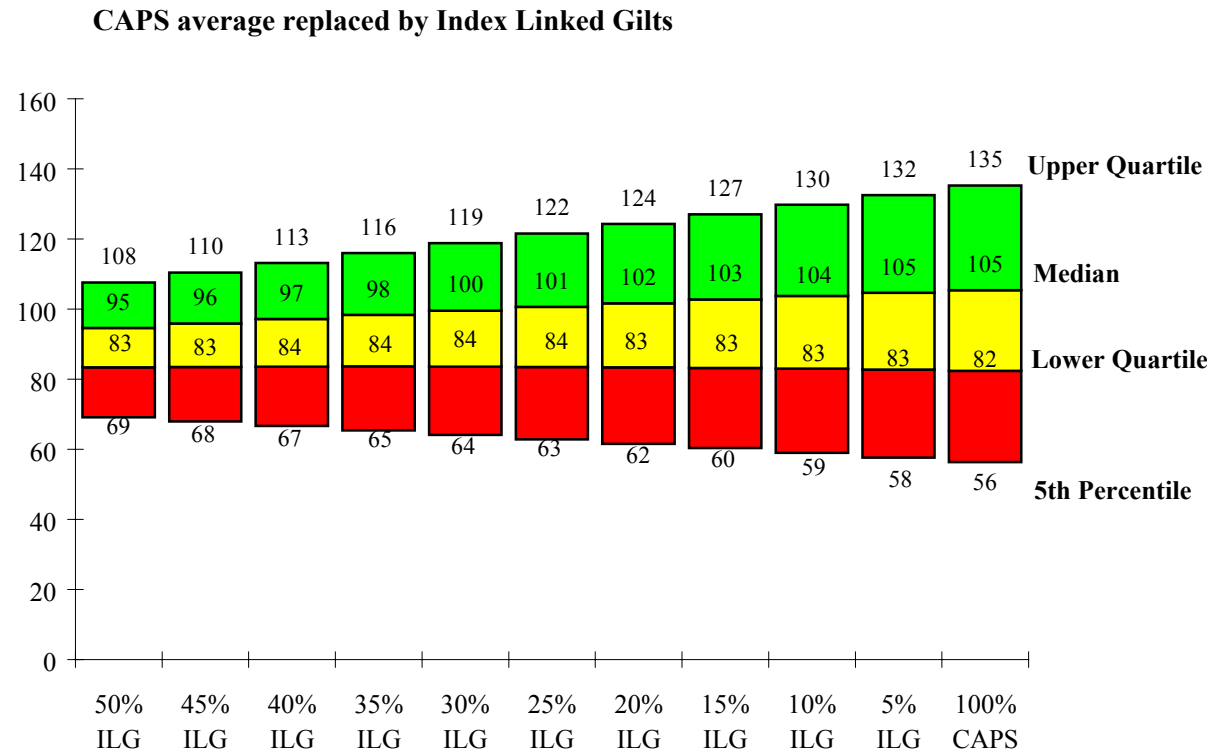
With a 3% return the improvement is less obvious. However hedge funds could still be considered beneficial in terms of reduced risk. In addition the median funding level remains stable with up to around 10% in hedge funds.

### CAPS average replaced by Hedge Funds with a 2% real return



With a 2% return (i.e. equal to that of index-linked gilts) the trade-off becomes less convincing still. Although the 5<sup>th</sup> percentile and lower quartile are improved (with up to 15% in hedge funds) the Median funding level drops off immediately. In fact the chart below

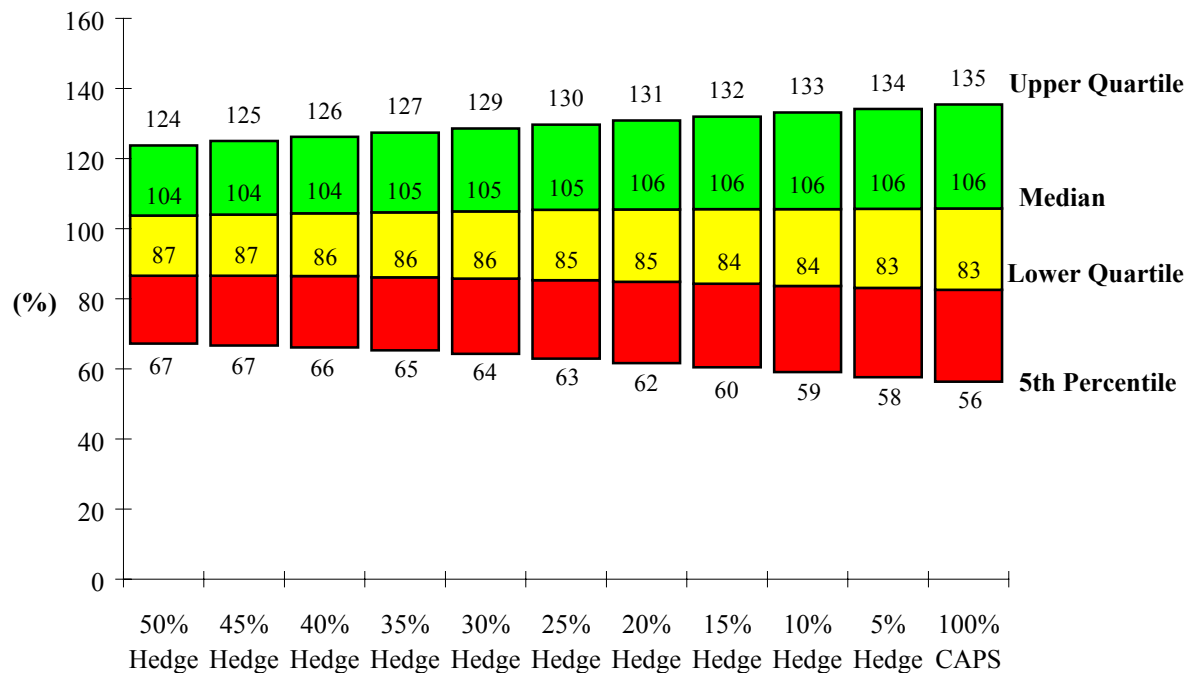
shows that a very similar pattern is seen when repeating this analysis with index-linked gilts in place of hedge funds.



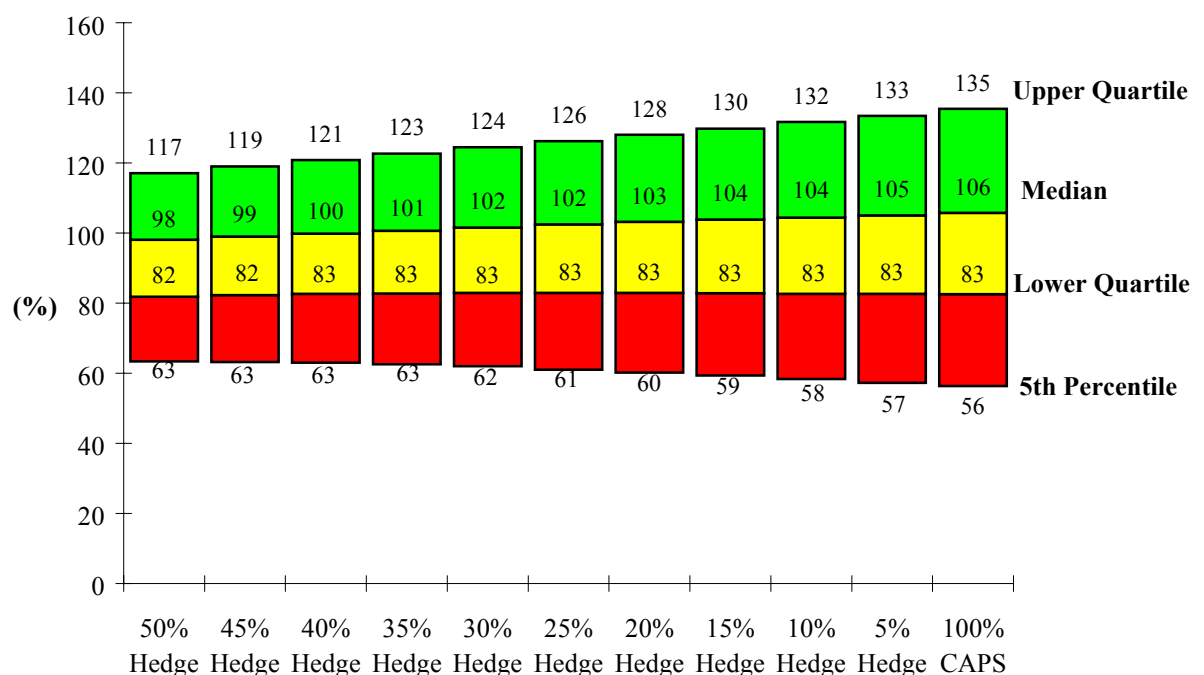
## Higher standard deviation and correlation for hedge funds

This analysis has been repeated with the highest level of correlation exhibited by Equity Neutral hedge funds (0.4) and an increased standard deviation (7%) to examine the impact of investing in a smaller group of funds rather than the index as a whole.

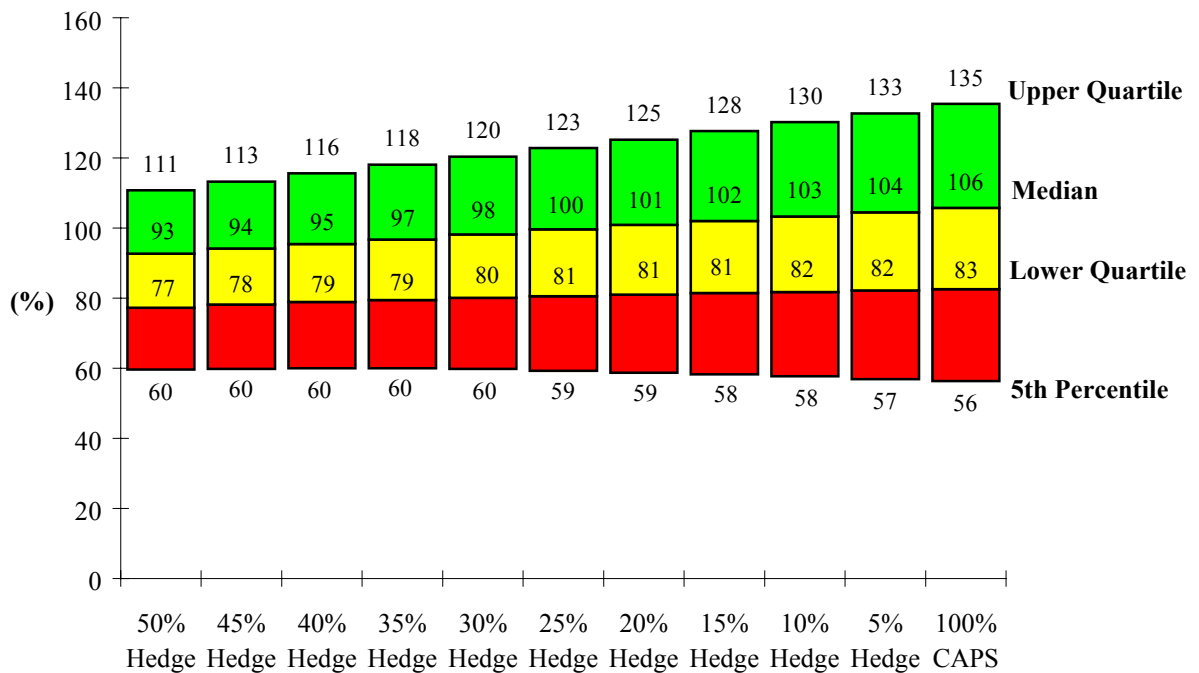
**CAPS average replaced by Hedge Funds with a 4% real return**



**CAPS average replaced by Hedge Funds with a 3% real return**



### CAPS average replaced by Hedge Funds with a 2% real return



### Conclusions

The following conclusion could be drawn from this analysis:

- the low correlation and standard deviation of returns exhibited by hedge funds may lead one to consider investing in this area.
- the level of return required to justify investing 5-10% of a fund's assets in this area is at most 1% in excess of index-linked gilt yields.
- the impact from hedge funds at this level is likely to be minimal.

Over ten years the 5<sup>th</sup> percentile funding level is increased by only 2-3% points, not unwelcome but hardly likely to be considered the pension fund's saviour. This may be the reason why some US and Swiss institutions are committing substantially more than 5-10% in hedge funds. With the nature of UK pension funds it is very unlikely, however, that any would commit more than a modest amount to hedge funds without having first hand experience of this type of investment.

It should be noted that the above conclusions could be considered flawed, for the following reasons:

- There is evidence suggesting that hedge funds have negative rather than positive alpha. Any analysis with this assumption would not suggest investing in hedge funds.
- The percentile measures and graphs, may fail to place appropriate weight on adverse risk events and are highly reliant on subjective assumptions of assumed real returns. The effect of compound interest over long periods further distorts the analysis.
- The derived correlations and standard deviations are not statistically robust for a variety of reasons, for example that both hedge funds and financial markets face multiple risks so that these measures will change over time as market conditions change.

In place of this subjective analysis, the alternative is to use the methodology briefly discussed in "Measurement of Investment Performance". Each hedge fund's performance

would be carefully monitored on a day to day basis and regression analysis would be undertaken to measure as many of the risks being run as was practical. To the extent that performance, relative to a portfolio exposed to the same risks, was positive, the hedge fund in question would be seen to be adding value and hence would be a candidate for investment consideration.

#### **4.3 Modelling hedge funds as a decision on manager structure**

4.3.1 Some would argue that an allocation to hedge funds can instead be looked on as a decision on investment structure (and the choice of individual hedge funds or funds of hedge funds a manager selection issue). An approach is outlined in Hodgson et al. (2000).

4.3.2 Given the large diversity of hedge funds and the fact that ultimately the value of a hedge fund may be linked to the underlying assets from which it is derived, treating hedge funds as a separate asset class seems inappropriate to some. In addition, attempting to model hedge funds as a separate asset class may depend on highly subjective assumptions (given the lack and unreliability of data).

4.3.3 However, many hedge funds are either benchmarked against cash or do not have an asset class benchmark explicitly defined.

4.3.4 This approach is then about modelling active risk, which requires assumptions about tracking errors and (net) information ratios. The problem surrounding data remain a challenge. The issues with use of crude tracking error data, and with information ratios, for monitoring active management, and for hedge funds in particular, are discussed elsewhere.

### **5. Implementing and monitoring hedge fund investments**

5.1 Overcoming the barriers to understanding hedge fund investing will involve creating structures that allow the levels of risk control, transparency and liquidity that institutions expect in long-only investing to be made available in the alternative investment arena. We examine these barriers in turn.

#### **5.2 Education**

5.2.1 Efforts promoting awareness among the institutional investment community of the potential benefits are underway. Many managers, consultants and industry organisations (such as the NAPF) are starting to raise the profile of hedge funds.

5.2.2 With the expectation of increased demand, traditional fund managers and advisors are starting to develop skill sets to help their clients make an informed decision as to whether to invest.

#### **5.3 Do you believe the numbers?**

5.3.1 Some of the data suggests hedge funds give returns as high as equities with lower volatility. However, as mentioned previously, once allowance is made for the various risks that funds are exposed to, there is evidence that hedge funds on average underperform passive benchmarks – the London Business School paper, for example.

5.3.2 Most investors currently lack confidence in hedge funds and are also reluctant to make significant change. A more pragmatic approach is to ask whether you can you select hedge funds that will give a risk-reward-correlation profile high enough to justify the 5% or 10% allocation you would feel comfortable with? As seen above, traditional asset-liability models require surprisingly poor performance expectations to justify this allocation, provided that the variance and correlations with traditional assets remain low. However, if you believe that the risk adjusted performance net of fees is negative, then a nil allocation would be suggested.

5.3.3 The biases discussed in section 3.4 are relevant here. In particular, investors need to be aware that the best performing managers may either be:

- Too small or new to meet requirements in terms of track record
- So successful that they have now closed to new investments.

Investors may be able to mitigate this in part by forging relationships with new fund start-ups, perhaps making a small allocation in exchange for future capacity.

5.3.4 Over time, as institutions scrutinise the performance records of their investments and the associated risks, more reliable performance histories will result.

## 5.4 Decision making framework

5.4.1 Techniques for making asset allocation decisions are becoming more diverse. However, while traditional models play a part, their results are heavily reliant on assumptions.

5.4.2 A modern finance approach would instead ask the question: has the decision (to allocate to hedge funds) increased the value of benefits to members or reduced the value of the future contributions due from shareholders? This analysis is designed to reduce the reliance on subjective assumptions.

## 5.5 Transparency, Liquidity, Security and Risk Controls

5.5.1 The goal for some investors is to reach the same levels of transparency, liquidity, security and risk control in hedge funds that institutions expect from their traditional investments.

5.5.2 One option available to larger investors is to operate “managed accounts”. Investment is not made in the hedge fund managers’ offshore fund, but the hedge fund manager instead trades within an account in the name of the investor. However, if you wish to access a diversified range of hedge fund investments with several managers (to improve diversification and reduce manager risk), this requires a significant allocation to hedge funds.

5.5.3 Investing through managed accounts ensures full transparency and security and means that liquidity is determined by the liquidity of the underlying instruments rather than by the manager.

5.5.4 Nonetheless, to analyse the risks being taken by the manager requires detailed data on positions taken and knowledge and experience sufficient to draw conclusions from this analysis, combined with considerable expertise and systems to analyse the complex positions.

5.5.5 For investors not allocating sufficient to hedge funds to justify a diversified programme of managed accounts, fund-of-funds provide an intermediate solution, although at an increase in costs. An improvement is to invest in a pooled fund operated by a reputable financially strong organisation that hires hedge fund managers to operate managed accounts for it – giving most of the managed account benefits but with the benefits of scale from pooling. The disadvantage of this route is the higher cost.

5.5 A summary of a hedge fund investment programme that aims to overcome some of these barriers is given below:

Inappropriate Asset Allocation	Many hedge fund strategies can be exposed to the same underlying risk factors. For example a sudden widening of credit spreads and reduction in liquidity could affect many strategies. Detailed understanding and monitoring of these risk exposures is required to manage these exposures.
Inappropriate Manager Selection	A single manager can suffer adverse experience. This

	might be an underperforming strategy, a drift in styles or a more serious issue such as fraud, excessive leverage or ineffective administration. Stringent initial due diligence and ongoing daily monitoring are required to help prevent these issues.
Diversification	Investing in a programme that has a broad range of underlying strategies ensures that you are not over-exposed to any one manager. Ensure that each fund in a programme is ring-fenced to ensure that in the event of any losses, these cannot contaminate other sub-funds.
Transparency	Analyse the positions of each of the sub-advisors on a daily basis to ensure they are within their investment guidelines in terms of securities chosen, diversification, investment risk, liquidity and leverage. If a sub-adviser strays outside his guidelines, need mechanism to prevent him trading in the sub-fund, and take control of the portfolio to unwind the positions.
Liquidity	Frequent pricing and dealing (keeping a reasonable balance of giving investors opportunity to withdraw/invest while not diluting performance by restricting investment policy). A long-term investor such as a pension fund may not need liquidity, but as the surveys highlighted, investors and their consultants prefer to have the ability to withdraw their investments should they wish.
Managed accounts	Appoint your own custodian for the assets, minimising the risk of fraud, misappropriation of assets or loss of control. Performing daily reconciliations between hedge fund managers, their brokers and the custodian provides additional security.
Manager research	Undertake considerable “forensic” research on each sub-adviser. Check how they have generated claimed outperformance, and also that key personnel have appropriate experience and history of professionalism.
Regulation	Operate funds within a regulated environment.
Monitoring	Daily risk-controls through the transparent structure and check price movements are in line with expectations given market performance. Performance analysis can help to identify changes in manager style and to ensure it reconciles with any quoted pooled fund performance managed by the same sub-adviser.
Leverage	Monitor leverage to ensure it remains appropriate and within guidelines.
Currency	Consider hedging unwanted currency exposures from investments in overseas assets.

5.6 It is worth noting that the derivatives technology required to monitor a single hedge fund strategy is large. Investing in a range of strategies or using a fund-of-fund approach will compound this difficulty. Any strategy to be used will require detailed investigation, including running detailed regression analyses on historic performance against alternative cash and derivative strategies. The aim is to select hedge fund managers to maximise performance net of fees and net of allowance for the various risks that the hedge fund may be running.



## **6. Some thoughts on the future of hedge fund investing in Europe**

### **6.1 Adoption of hedge funds by institutions**

- 6.1.1 There is an increasing volume of hedge funds and funds of hedge fund launches. There have also been a number of large European pension plans (for example AstraZeneca in the UK and ABP in the Netherlands) that have made allocations to hedge fund programmes.
- 6.1.2 UK based actuarial consultants are beginning to research hedge funds as an asset class and develop techniques for modelling hedge fund allocations and selecting funds of hedge funds (there has been little interest in researching individual hedge funds outside the equity market neutral area).
- 6.1.3 A survey of European institutions (mostly insurance companies) by Ludgate Communications suggested that over 50% are considering hedge fund investments.

### **6.2 Capacity may constrain this allocation**

- 6.2.1 A number of large macro hedge funds have recently closed or returned capital to investors. Many hedge fund managers quote maximum assets that they will manage.
- 6.2.2 The cost of trading in securities rises as the size of the trade increases because trading large volumes of a stock moves the price against you. The implications for the maximum size of assets that can be run with a particular strategy will then depend on many factors, including:
  - Liquidity of the securities traded and any other cost restrictions (eg trading or registration taxes)
  - Marginal benefit from each transaction compared to the marginal cost.
  - Breadth of strategy (i.e. what proportion is invested in each transaction).Some managers also impose liquidity restrictions on the size of positions they take (for example so that they can unwind any position in a day).
- 6.2.3 These capacity restrictions apply equally to long-only active managers. Hedge fund managers may be more focussed on capacity for several reasons:
  - Short sales and leverage mean that being able to unwind positions quickly is more important.
  - Hedge funds may invest in narrower sections of the market or less liquid securities (for example convertible bonds rather than large capitalisation equities).
  - Hedge fund managers generally receive a performance fee and have their own assets invested in the fund and so may be more focussed on performance than a manager that is paid based solely on assets under management.
- 6.2.4 Some large investors have been disappointed when trying to implement hedge fund programmes. CALPERS (the California Public Employees' Retirement System ) stated an intention to invest \$11bn in hedge funds and subsequently decided to reduce this allocation.
- 6.2.5 Many hedge fund managers are close to capacity, or are acutely aware of capacity as an issue. They may not be prepared to meet the disclosure and reporting requirements that large pension schemes demand and are not prepared to offer fee discounts that large investors may be used to.

### **6.3 Demand generates supply**

- 6.3.1 A high level of demand for hedge funds will no doubt attract more entrants to this market. We have seen evidence of traditional long-only managers starting hedge funds and former proprietary traders leaving investment banks to establish their own funds. Some large investment management organisations may be starting hedge funds to keep their best investment professionals.
- 6.3.2 Some of the new entrants (perhaps those with reputations at risk) will apply greater levels of investment in risk monitoring and monitoring of their hedge funds. However, there is also a danger that people without experience in short-selling, leverage and use of derivatives will find that the hedge fund arena is very different from their traditional business.
- 6.3.3 As more hedge funds are established, the capacity for some strategies will start to reduce. Some managers without the required skills will be lured by the prospects of strong demand and high fees and some investors will find that the returns they achieve are disappointing.

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